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News Release

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U.S. Army Corps of Engineers Project raises oxygen levels for Roanoke River, Lake Gaston

BOYDTON, Virginia—Federal and State officials from North Carolina and Virginia gathered at the John H. Kerr Dam today to witness the kickoff of a new project that will improve water quality downstream of the dam.

U. S. Army Corps of Engineers is raising oxygen levels through a process called "Turbine Venting." A set of baffles, installed inside one of the turbines used in generating power at the dam, causes air to be pulled in and mixed it with water in a turbine that is whirling 36,000 gallons per second through its blades. "Results at Tennessee Valley Authority (TVA) facilities show that turbine venting can add one to three parts per million of dissolved oxygen," said Joe Tanner, John H. Kerr project manager. "Early testing results show that we are getting even greater benefits, in the range of 3.3 milliliters per liter. Our plan is to vent the remaining turbines before next summer."

"We're working to improve water quality on many different fronts in North Carolina," said John Morris, Director of Water Resources for the State of North Carolina. "We're delighted that the Corps has been proactive in finding a way to improve water quality in Lake Gaston, and making conditions better for fish and wildlife."

What's the big deal about such a tiny amount of dissolved oxygen? In this case, a little means a lot. In summer conditions, dissolved oxygen levels in water downstream of the John H. Kerr dam sometimes gets lower than is needed to support a healthy ecosystem. When oxygen in the Kerr tailwaters gets low, all but the most tolerant fish species leave the upper reaches of Lake Gaston in search of favorable conditions downstream.

"Reservoir tailwaters can be some of the most productive recreational fisheries resources available to the public," said Bud LaRoche, Regional Fisheries Manager for the Virginia Department

of Game and Inland Fisheries. “The Kerr Dam tailwater is a very popular fishing area during the spring and early summer months. However, during late summer and early fall, angling opportunities have been greatly reduced due to low dissolved oxygen levels. We applaud the Corps for taking these steps to improve water quality in the tailwater and upper reaches of Lake Gaston. The angling community should benefit greatly from this initiative,” said LaRoche.

Working with the Department of Water Resources and other interested North Carolina, Virginia and Federal agencies, the Virginia Power Company, and North Carolina State University, the Corps began investigating other ways to improve oxygen levels last summer. Publication of a 1998 TVA report on turbine venting convinced the Corps to consult with TVA to see if these procedures could work at John H. Kerr.

“We saw no reason why we couldn’t repeat TVA’s success,” Tanner said. “This is a modification that can be accomplished within the Corps’ current operating authorities and budget. We want to be able to say ‘Yes, we *can* do something,’ when our partners and neighboring communities ask for help,” Tanner said. “We’re glad we found a way that we could take action.”

“Turbine venting is the most economical and simple measure that can be taken to add oxygen to the river,” Chuck Wilson explained. “It’s the logical first thing to try.” A biologist at the U.S. Army Corps of Engineers, Wilmington District, Wilson explained the conditions turbine venting will help to alleviate.

“During the hot months, deep lakes develop thermal stratification,” he said. Simply put, that means lake waters become layered because of heat differences between the top layer of the lake exposed to hot summer sun, and the coolest bottom layer of the lake. When this layering occurs, warm water on the surface does not mix with the cooler bottom water. “Decomposing plant and animal material and microscopic animals called plankton living in the bottom waters cause this layer to become “anoxic” –that is, without oxygen,” Wilson explained. “Thermal stratification is a natural process in deep water lakes, and is not a problem in Kerr Reservoir. However, because the intakes are located in the bottom layer, when water is drawn through the dam to operate the turbines and generators, the bottom layer goes first. Turbine venting pulls air into this water, adding needed oxygen for the fish that live downstream in Lake Gaston.”

“Now that we know the first turbine vented at John H. Kerr Lake and Dam shows favorable results, our staff will proceed to modify all the turbines at the dam,” Tanner said.

“This is a winning project for everyone,” John Morris said. “With the Corps’ help, we can improve water quality on the Roanoke River and Lake Gaston, our fisheries will improve, people visiting North Carolina and our sister state, Virginia, will find better outdoor recreation opportunities, and all this has been done at the lowest possible cost to taxpayers.”

“This is a great example of the Corps responding to the concerns of the state resource agencies and the public, and working in a cooperative way to find a solution to the problem,” LaRoche said.

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